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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,966	11/24/2003	Tsing-Tang Song	250913-1030	5221

24504 7590 06/26/2007
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EXAMINER

CHU, JOHN S Y

ART UNIT	PAPER NUMBER
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1752

MAIL DATE	DELIVERY MODE
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06/26/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/720,966

Applicant(s)

SONG ET AL.

Examiner

John S. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,6-11,14-19 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22 is/are allowed.
- 6) ☒ Claim(s) 1,2,6-11 and 14-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to the RCE filed may 14, 2007.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 6-11, 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over NOJIMA et al (6,399,277) in view of SCHULTZ et al (6,306,555).

The claimed invention is correctly drawn to the following:

1. (Previously presented): A negative photoresist composition with multi-reaction systems, comprising the following components as a uniform solution in an organic solvent:

at least one unsaturated resin having a molecular weight in the range from 5,000 to 250,000 and an acid value between 50 and 250mgKOH/g, selected from the group consisting of homopolymers, copolymers, and combinations thereof, which the homopolymers and the copolymers are synthesized by at least one monomer selected from the group consisting of styrene, methyl styrene, acrylic acid, acrylate, methyl acrylate, methyl acrylate, vinyl ether, and combinations thereof;

at least one photoinitiator in an amount of 0.1 to 35 parts by weight, based on 100 parts by weight of the unsaturated resin;

at least one free radical reactive monomer in an amount of 0.1 to 100 parts by weight;

at least one photoacid generator in an amount of 0.1 to 35 parts by weight, wherein the photoacid generator is triaryl sulfonium hexafluorophosphate, triphenyl triflate, triphenyl stibnite, methoxy triphenyl triflate, methoxy triphenyl stibnite, trimethyl triphenyl triflate or combinations thereof; and

at least one cation reactive monomer in an amount of 0.1 to 35 parts by weight.

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NOJIMA et al discloses a photopolymerizable thermosetting resin composition comprising an unsaturated resin, a diluent (represented by an photopolymerizable vinyl type monomer), a photopolymerization initiator, a setting adhesion-imparting initiator (see column 12, line 63 – column 13, line 53 wherein lines 33-39 , which disclose onium photoacid generating compounds), and an epoxy group-containing compound (meets the claimed cation reactive monomer). The compositional ingredients can be found in column 4, lines 26-34 wherein each of the components, which desired is disclosed.

NOJIMA et al lacks a working example with a photoacid generator. Here applicants are directed to column 13, lines 32-42 wherein suitable acid generators include triphenyl sulfonium hexafluoroantimonate and diphenyliodonium tetrafluoroborate for the photoacid generating compounds which are seen as functionally equivalent to the listed setting-adhesion imparting agents defined as component (D).

SCHULTZ et al discloses the functional equivalence of the triflate onium salts to the disclosed hexafluoroantimonate anions (column 41, lines 39-48) of NOJIMA et al such that the skilled artisan would reasonably expect same or similar results with using any of the known onium salt photoacid generators for cationic polymerization.

It would have been *prima facie* obvious to one of ordinary skill in the art of photopolymerizable thermosetting composition to insert a triphenylsulfonium triflate in for the triphenylsulfonium hexafluoroantimonate for the setting-adhesion imparting agent of dicyandiamide with the reasonable expectation of same or similar results for excellent properties for a solder resist like soldering resistance, solvent resistance, and chemical resistance.

The arguments by applicant have been carefully considered, however the rejection is repeated for the following reasons:

1) The combination of references used in the rejection under 35 U.S.C. 103 is believed to fully comply with the proper practice of the statutes relating to obviousness. NOJIMA et al teaches a negative working photosensitive composition wherein the mechanic of the ingredients functional in the same way as the claimed negative working composition. The rejection is not using non-analogous art and trying to stick a square peg into a round hole. The art is in the field of invention such that the skilled artisan would and could look to NOJIMA et al as related art.

2) Applicants argue the amount of the setting adhesion-imparting agent in NOJIMA et al does not serve as a cationic photopolymerization catalyst, however the amounts disclosed in column 13, lines 50-53 fall within the range as recited in claim 1, thus the amounts of the setting adhesion actually teach the recited claim and would be expected to function in the same manner to cure the composition.

3) The cationic catalysts are well known in the photolithographic art and the onium salts with their counter ions are available to one of ordinary skill in the art of photopolymerization, such that the alternative use of the anions would be expected to be functionally equivalent unless shown otherwise by objective evidence. The skilled artisan would expect same or similar results when using any of the listed cationic catalysts as disclosed by SHULTZ et al in the art of NOJIMA et al.

3. Claim22 is allowed.

None of the prior art references disclose the negative photoresist composition having the specific ingredients as now recited in claim 22.

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Cynthia Kelly, can be reached on (571) 272-1526

The fax phone number for the USPTO is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/John S. Chu/
Primary Examiner, Group 1700

J.Chu
June 23, 2007